ThinkPad s30, s31 Hardware Maintenance Manual

Before using this information and the product it supports, be sure to read the general information under “Read This First” on page 1.

Second Edition (October 2001)

Contents

ThinkPad s30, s31 Hardware Maintenance Manual

About This Manual

This manual contains service and reference information for the IBM ThinkPad s30 and s31products. Use this manual along with the diagnostics tests to troubleshoot problems effectively.

The manual is divided into sections as follows:

- The introduction section provides general information, guidelines, and safety information required to service computers.
- The product-specific section includes service, reference, and product-specific parts information.

This manual is intended for trained servicers who are familiar with ThinkPad products. Use this manual along with the PC-Doctor to troubleshoot problems effectively.

Read This First

Before you go to the checkout guide, be sure to read this section.

Important Notes:

- **Only certified trained personnel should service the computer.**
- Read the entire FRU service procedures before replacing any FRUs.
- **Use new nylon-coated screws when you replace FRUs.**
- **Be extremely careful during write operations such as copying, saving, or formatting.** Drives in the computer that you are servicing might have been rearranged or the drive startup sequence might have been altered. If you select an incorrect drive, data or programs might be overwritten.
- **Replace FRUs only for the correct model.** When you replace a FRU, make sure the model of the computer and FRU part number are correct by referring to the FRU parts list.
- **A FRU should not be replaced because of a single, unreproducible failure.** Single failures can occur for a variety of reasons that have nothing to do with a hardware defect, such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should be considered only when a recurring problem exists. If

this is suspected, clear the error log and run the test again. Do not replace any FRUs if log errors do not reappear.

Be careful not to replace a non-defective FRU.

What to Do First

The servicer must include the following in the parts exchange form or parts return form that is attached to the returned FRU:

1. Name and phone number of servicer
2. Date of service
3. Date when part failed
4. Date of purchase
5. Failure symptoms, error codes appearing on the display, and beep symptoms
6. Procedure index and page number in which the failing FRU was detected
7. Failing FRU name and part number
8. Computer type, model number and serial number
9. Customer's name and address

Before checking problems with the computer, determine whether or not the damage applies to the warranty by referring to the following:

Note for Warranty: During the warranty period, the customer may be responsible for repair costs if the computer damage was caused by misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance by the customer. The following list provides some common items that are not covered under warranty and some symptoms that may indicate that the system was subjected to stresses beyond normal use:

The following is not covered under warranty:

- LCD panel cracked by applying excessive force or from being dropped
- Scratched (cosmetic) parts
- Cracked or broken plastic parts, broken latches, broken pins, or broken connectors caused by excessive force
- Damage caused by liquid spilled into the system
- Damage caused by the improper insertion of a PC Card or the installation of an incompatible card
- Damaged or bent PC Card eject button
- Fuses blown by attachment of a non-supported device
- Forgotten computer password (making the computer unusable)

- Sticky keys caused by spilling liquid onto the keyboard

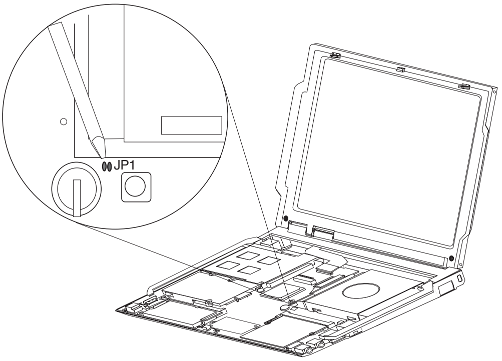
The following symptoms might indicate damage caused by non-warranted activities:

- Missing parts might be a symptom of unauthorized service or modification.
- Hard disk drive spindles can become noisy from being subjected to excessive force or from being dropped.

How to Disable the Password

There are three passwords used at a typical customer site: the Supervisor Password, the hard disk drive password, and the Power On password.

- Power On password:
  1. Power off the computer.
  2. Remove the battery pack and AC Adapter.
  3. Remove the keyboard, see "1020 Keyboard ASM" on page 31.
  4. Short the jumper JP1. See the following figure:



  5. Replace the keyboard.
  6. Power on the computer and wait until POST ends.
  7. Verify that the password prompt does not appear.
- Supervisor and hard disk drive passwords:

  The Supervisor Password and hard disk drive password are security features that are used to protect the system and the hard disk drive data from unauthorized access. No overriding capability is provided, so they cannot be replaced if they are forgotten. If the customer forgets the Supervisor Password, the system board must be replaced. If the customer forgets the hard disk drive password, the hard disk drive must be replaced.

Product Overview

The following shows an overview of the system features of the ThinkPad s30 and s31 series.

Feature	Description
Processor	Intel Mobile Pentium III 600 MHz, 128 KB L2 cache
Bus architecture	PCI Bus
Memory	128 MB SDRAM onboard 32 MB, 64 MB or 128 MB DIMM card (max. 256 MB)
BIOS ROM	up to 512 Kbytes
Video	• 10.4–inch, 16M colors, 640x480 or 1024x768 pixel TFT color LCD
Audio	• 20–bit stereo D/A and 18–bit stereo A/D audio • Internal stereo speakers
Hard disk drive	**s30** • 10/20 GB, 2.5–inch, IDE interface **s31** • 15/30 GB, 2.5–inch, IDE interface
I/O ports	• External monitor (mini-plug) • Headphone/line-out • Microphone-in • USB • RJ-11 • RJ-45
Internal Ethernet/modem	56 Kbps (depends on the model)
PC card (PCMCIA)	One Type II CardBus support
Mini-PCI card	Mini-PCI Type-IIIa
AC Adapter	56–Watt type

Fn Key Combinations

The following table shows the Fn key and function key combinations and their corresponding functions.

The Fn key works independently of the operating system. The operating system obtains the status through the system management interface to control the system.

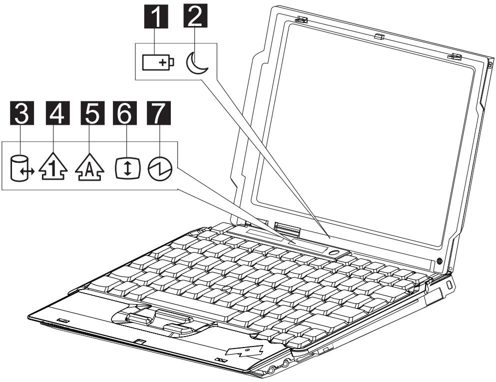
Fn +	Result
F3	LCD off

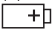
Fn +	Result
F4	Suspend mode
F7	Switch between the LCD, the external monitor, and both the LCD and external monitor.
F12	Hibernation mode
Insert	Increases the volume
Delete	Decreases the volume
Backspace	Mutes the internal speaker
Home	Increase brightness
End	Decrease brightness
PgUp	Toggle ThinkLight on/off
Spacebar (s31 only)	Enables the FullScreen Magnifier

Note: Some models use the three volume control buttons to adjust the volume. The volume control buttons are located above the keyboard, next to the ThinkPad button.

Status Indicators

The system status LED indicators show the current computer status. The following shows the location of each indicator symbol and the meaning of each indicator.



Symbol	Color	Meaning
(1) Battery status 	Green	Enough battery power remains for operation.
	Blinking orange	The battery pack needs to be charged.
	Orange	The battery pack is being charged.
	Blinking green	The battery pack is being charged and is almost fully charged.
(2) Suspend mode 	Green	The computer is in suspend mode.
	Blinking green	The computer is entering suspend mode.
(3) Drive in use 	Green	Data is being read from or written to the hard disk drive. Do not enter hibernation mode or power off the computer when this indicator is on.
(4) Numeric lock 	Green	The numeric keypad on the keyboard is enabled. You enable or disable the keypad by pressing and holding the **Shift** key, and pressing the **NumLk** key. For details, see the User's Reference.
(5) Caps lock 	Green	Caps Lock mode is enabled. All alphabetic characters *(A-Z)* are entered in capital letters without the **Shift** key being pressed. You enable or disable the Caps Lock mode by pressing the **Caps Lock** key.
(6) Scroll lock 	Green	Scroll Lock mode is enabled. The **Arrow** keys can be used as screen-scroll function keys. The cursor cannot be moved with the **Arrow** keys. *Not all application programs support this function.* You enable or disable Scroll Lock mode by pressing the **ScrLk** key.
(7) Power on 	Green	The computer is operational. This indicator is always on when the computer is on or in suspend mode.

Related service information

This section provides information about restoring the pre-installed software.

Restoring the pre-installed software

To restore the pre-installed software for the s30 you can use either the Product Recovery Program or a Recovery CD.

To restore the pre-installed software for the s31 you can only use the Product Recovery Program.

The Product Recovery Program is in a section of the hard disk drive (the Service Partition) that is not displayed by Windows Explorer. Use the Recovery CD if it was provided with the computer.

Note: The recovery process might take up to 2 hours.

To use the Product Recovery program to restore the pre-installed software, do the following:

1. Save all files and shut down the desktop.
2. Turn off the computer.
3. Turn on the computer. Quickly press **F11** when this message is displayed on the screen: ...″To start the Product Recovery Program, press F11″...This message is displayed for only a few seconds.

   Note: If this message does not appear, you can use a Recovery Repair diskette to get access to the Product Recovery program. (see “To create a recovery repair diskette” on page 8 for instructions of making the Recovery Repair diskette).
4. From the list displayed on the screen, select the operating system you want to recover.
5. Select the recovery options you want, and follow the instructions on the screen.

Creating the service partition for the s30 series

To create the Service Partition and install the preloaded system from the Recovery CD, do the following;

To create the Service Partition (SP):

1. Erase all partitions on the hard-disk drive using FDISK or a similar application.
2. Boot with the Recovery CD (and the boot diskette if required).

3. A menu will appear stating ″Your computer originally included a Product Recovery program...Reinstall the Product Recovery Program? (Y/N)″.

   Note: If the hard-disk drive contains any partitions, you will not receive this menu-go to step 1.
4. Enter ″**Y**″ and the Service Partition will be created and loaded with D2D files.

   Note: If you do not want to create the Service Partition, press ″**N**″, and then go to step 8.
5. Press **Enter** at the next window to continue.

   The Service Partition is created. The system automatically reboots during this process.

   The recovery process copies some files to the Service Partition and, PKUNZIPs others.

   Follow the prompts-you may be prompted to change CDs.

   The system reboots when the process is complete. Continue to step 6 to install the preloaded system.

   Install the preloaded system from the CD.
6. Boot with the Recovery CD (and the boot diskette if required).
7. If the hard disk drive is blank, a menu will appear stating ″Your computer originally included a Product Recovery program...Reinstall the Product Recovery program? (Y/N)

   To install the Service Partition, go to step 4.

   To preload the hard disk drive without installing the Service Partition, press ″**N**″.
8. If a menu appears asking which operating system to install, highlight the proper operating system and press ″**ENTER**″.
9. A menu will appear stating ″**Full Recovery:**″. Press ″**ENTER**″ to select.
10. Enter ″**Y**″ at the three windows which follow.
11. Follow the prompts to complete Recovery.

To create a recovery repair diskette

The Recovery Repair diskette is used to recover the prompt that is needed to access the Product Recovery program, if the prompt does not appear. Make a Recovery Repair diskette and save it for future use. To make a Recovery Repair diskette:

1. Shut down and restart the computer.
2. Attach the external diskette drive to the computer.

3. At the prompt, press **F11**. (The option to press F11 appears for only a few seconds. You must press F11 quickly). The Product Recovery program main menu appears.
4. If you are using Windows 2000 Professional, you will be prompted to select the appropriate operating system setting. This menu does not appear for Windows 98 SE.
5. Select System Utilities from the main menu. Press **Enter**.
6. Select Create a Recovery Repair diskette. Press **Enter**.
7. Follow the on-screen instructions.
8. When the process is completed, label the diskette as the Recovery Repair diskette and save it for future use.

To use the recovery repair diskette

1. Shut down and turn off the computer.
2. Attach the external diskette drive to the computer.
3. Insert the Recovery Repair diskette into the drive; then turn on the computer.
4. Follow the on-screen instructions.

Checkout Guide

Use the following procedure as a guide for computer problems.

Note: The diagnostic tests are intended to test only IBM products. Non-IBM products, prototype cards, or modified options can give false errors and invalid system responses.

1. Obtain the failing symptoms in as much detail as possible.
2. Verify the symptoms by attempting to recreate the failure by running the diagnostic test or by repeating the same operation.

   Note: To run the diagnostics, refer to “Running the Diagnostics” on page 27.
3. Use the following table with the verified symptom to determine which page to go to. Search the symptoms column and find the description that best matches your symptom; then go to the page shown in the ″Go to″ column.

Symptoms (Verified)	Go to
Power failure. (The power-on indicator does not go on or stay on.)	“Power System Checkout” on page 14, then use table in “Power-Related Symptoms” on page 23.
POST does not complete. No beeps or error codes/messages are indicated.	“Symptom-to-FRU Index” on page 19, then use table in “No Beep Symptoms” on page 22.
POST beeps, but no error codes are displayed.	“Symptom-to-FRU Index” on page 19.
POST detected an error and displayed numeric error codes.	“Symptom-to-FRU Index” on page 19, then use table in “Numeric Error Codes” on page 19.
The diagnostic test detected an error and displayed a FRU code.	“Running the Diagnostics” on page 27.
Other symptoms (such as LCD display problems).	“Symptom-to-FRU Index” on page 19.
Symptoms cannot be recreated (intermittent problems).	Use the customer-reported symptoms, and go to “Symptom-to-FRU Index” on page 19.

Testing the computer

The ThinkPad computer has a test program called PC-Doctor for DOS (hereafter called *PC-Doctor*). You can detect errors by running the diagnostics test of PC-Doctor. This section is an overview on detecting the problem.

To run the test, do the following:

Note: In the following procedure, you can select an item not only with the arrow keys, but also with the TrackPoint. Instead of pressing **Enter**, you can also click the left click button.

1. Connect the USB diskette drive to the computer.
2. Insert the PC-Doctor DOS Disk into the diskette drive; then power on the computer.

   If the computer cannot be powered on, go to “Power System Checkout” on page 14 and check the power sources.

   If an error code appears, go to “Symptom-to-FRU Index” on page 19.

   The PC-Doctor main panel appears.
3. Select **Diagnostics** with the arrow keys, and press **Enter**.

   A pull-down menu appears:

Note: The pull-down menu differs depending on the model.

4. Run the applicable function test.
5. Follow the instructions on the screen. If there is a problem, PC-Doctor shows some messages.
6. Reseat the cable or connector of the detected FRU and run the test again.

   If the error recurs, replace the FRU that caused the error.

   Note: With some FRUs, especially the system board, the problem may be caused by peripheral FRUs. Verify that each peripheral FRU, such as the flexible cable, has no problem by doing the following:

   a. Replace each peripheral FRU one at a time, and run the test again.
   b. If the peripheral FRUs have no problem, replace the main FRU itself.
7. To exit the test, select **Quit – Exit Diag**.

   To cancel the test, press **Esc**.

The following table lists the options on the test menu.

Diagnostics	Interactive Tests
• Run Normal Test • Run Quick Test • CPU/Coprocessor • Systemboard • Video Adapter • Fixed Disks • Diskette Drives • Other Devices • Memory Test – Full • Memory Test – Quick	• Keyboard • Video • Internal Speaker • Mouse • Joystick Test • Diskette Test • System Load • Stereo Speaker
Note: In **Keyboard** test within **Interactive Tests**, the **Fn** key is scanned only once. Each key should be pressed for at least 2 seconds; otherwise, it cannot be sensed.	

Note: (s30 only) The testing of 802.11b requires an Access Point properly prepared prior to conducting the test. When testing 802.11b with PC-Doctor DOS, please confirm the following points:

1. An OBI’s Access Point is located about 3 meters from the system.
2. The encryption is disabled on the Access Point.

If the distance between the Access Point and the system is too far, the test may report failure even if the device is properly working. If the encryption is enabled on the Access Point, the test program cannot properly communicate with the Access Point to test the device, and will report failure.

Due to the nature of wireless connection, the test may report failure with ″No LinkTest response received″ error message in the log, even if the device is working properly. When the test failed with this error, please repeat the test for a few times. The device may be working properly unless the same error persists.

Audio Checkout

Do as follows:

1. Boot from the diagnostics diskette and start the program.
2. Go to **Interactive Tests** on the main menu and select the **Internal Speakers** test.
3. If no sound is heard, replace the speakers.

Fan ASM Checkout

To check the fan ASM, do the following:

1. Boot from the diagnostics diskette and start the program.
2. Go to **Diagnostics** on the main menu and select **Other Devices**.
3. Follow the description in the window. If the test detects a fan ASM problem, replace the fan.

Keyboard and Auxiliary Input Device Checkout

Note: Remove the external keyboard if the internal keyboard is to be tested.

If the internal keyboard does not work or an unexpected character appears, make sure that the flexible cable extending from the keyboard is correctly seated on the connector.

If the keyboard cable connection is correct, run the Keyboard Test. See “Running the Diagnostics” on page 27 for details.

If the test detects a keyboard problem, do the following one at a time to correct the problem. Do not replace a non-defective FRU.

1. Replace the keyboard.
2. Replace the system board.

The following auxiliary input devices are supported for this computer:

- Numeric keypad
- Mouse (USB-compatible)
- External keyboard (USB-compatible)

If any of these devices do not work, reseat the cable connector and repeat the failing operation.

If the problem does not reoccur, replace the device and then the system board.

Memory Checkout

DIMM are available for increasing memory capacity.

Onboard (MB)	Slot (MB)	Total Memory (MB)
128	0	128
128	32	160
128	64	192
128	128	256

Memory errors might stop system operation, show error messages on the screen, or hang the system.

Use the following procedure to isolate memory problems:

1. Turn off the computer and remove any installed DIMM from its slot.
2. Boot from the diagnostics diskette and start the program.
3. Go to **Diagnostics** on the main menu and select **Memory Test.** If an error appears, replace the system board.
4. Turn off the computer and reinstall the DIMM; then turn on the computer. Verify the memory size; then test the memory. If an error appears, replace the DIMM.

Note: Make sure that the DIMM is properly installed into the connector. A loose connection can cause an error.

1394/LAN or Wireless Board Checkout (s30 only)

Do the following to isolate the problem to the system internal 1394/LAN or wireless board:

1. Boot from the diagnostics diskette and start the program.
2. Go to **Diagnostics** on the main menu and select **Other Devices**.
3. Follow the description in the window.
4. If the test detects a problem, replace the board.

Power System Checkout

To verify the symptom of the problem power on the computer using each of the following power sources:

1. Remove the battery ASM.
2. Connect the AC Adapter and check that power is supplied.
3. Disconnect the AC Adapter and install the charged battery ASM; then check that power is supplied by the battery ASM.

If you suspect a power problem, refer to the appropriate power supply check listed below:

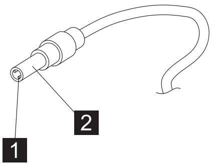
- “Checking the AC Adapter”
- “Checking the Operational Charging” on page 15
- “Checking the Battery ASM” on page 15

Checking the AC Adapter

You are here because the computer fails only when the AC Adapter is used:

- If the power-on indicator does not turn on, check the power cord of the AC Adapter for correct continuity and installation.
- If the operational charge does not work, go to “Checking the Operational Charging” on page 15.

Unplug the AC Adapter cable from the computer and measure the output voltage at the plug of the AC Adapter cable. See the following figure.



Pin	Voltage (V dc)
1	+15.5 to +17.0
2	Ground

If the voltage is not correct, replace the AC Adapter.

If the voltage is within the range, do the following:

- Replace the system board.
- If the problem is not corrected, go to “Undetermined Problems” on page 25.

Note: An audible noise from the AC Adapter does not always indicate a defective adapter.

Checking the Operational Charging

To check operational charging, use a discharged battery pack (battery ASM) or a battery ASM that has less than 50% of the total power remaining when installed in the computer.

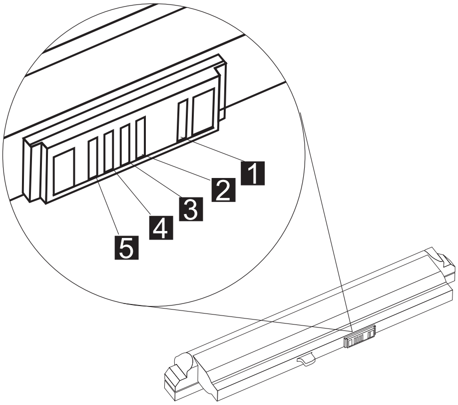
Perform operational charging. If the battery status indicator does not turn on, remove the battery ASM and let it return to room temperature. Reinstall the battery ASM.

If the charge indicator still does not turn on, replace the battery ASM. If the charge indicator still does not turn on, replace the system board. Then reinstall the battery ASM. If the reinstalled battery ASM is not charged, go to the next section.

Checking the Battery ASM

Do the following:

1. Power off the computer.
2. Remove the battery ASM and measure the voltage between battery terminals 1 (+) and 5 (-). See the following figure:



Note: Signal lines, not used in these steps, are used for communications between the system and the battery.

3. If the voltage is less than 10.6V, the battery ASM has been discharged, recharge the battery ASM. If the voltage is still less than 10.6V, replace the battery.

TrackPoint Checkout

If the external mouse is connected, the TrackPoint does not work. In this case, please detach the external mouse to check the TrackPoint.

If this does not correct the TrackPoint problem, continue with the following:

After you use the TrackPoint, the pointer drifts on the screen for a short time. This self-acting pointer movement can occur when a slight, steady pressure is applied to the TrackPoint pointer. This symptom is not a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.

If a click button problem or pointing stick problem occurs, do the following:

1. Boot from the diagnostics diskette and start the program.
2. Go to **Interactive Tests** on the main menu and select **Mouse**.
3. Follow the instructions in the message window.

If either the pointing stick or the click button does not work, do the following actions one at a time to correct the problem. Do not replace a non-defective FRU.

1. Reseat the keyboard Touchbutton cables.
2. Replace the keyboard.
3. Replace the system board.

Power Management Features

Three power management modes are available in the computer system to reduce power consumption and to prolong battery life.

Standby Mode

In standby mode, the following occurs:

- The LCD backlight turns off.
- The hard disk drive motor stops.

Events that cause the computer to enter standby mode:

- Standby mode requested by the Fn key (Fn+F4).

The computer exits standby and resumes operation when any key is pressed.

Suspend Mode

In suspend mode, the following occurs:

- The LCD is powered off.
- The hard disk drive is powered off.
- The CPU stops.

Events that cause the computer to enter suspend mode:

- Suspend mode requested by the Fn key (Fn+F4).
- The Lid is closed.
- The specified time has elapsed.
- Battery low occurs and hibernation conditions are insufficient.

  Note: When battery is low, the battery status indicator blinks orange.

Note: In the IBM BIOS Setup Utility, the computer can be set to suspend when the lid is closed.

The following events cause the computer to resume operation from suspend mode:

- The Lid is opened.
- The real time clock alarm is signaled.
- The ring indicator (RI) is signaled by a PC Card device or the internal modem.
- The Fn key is pressed.
- Power switch is pressed.

The computer also exits suspend mode when the battery is critically low or timer conditions are satisfied for entering hibernation mode.

Hibernation Mode

Note: Before using hibernation mode, you need a hibernation file.

In hibernation mode, the following occurs:

- The system status, RAM, VRAM, and setup data are stored on the hard disk.
- The system is powered off.

Events that cause the computer to enter hibernation mode:

- Hibernation mode requested by function key (Fn+F12).
- Timer conditions are satisfied in suspend mode when hibernate by timer is enabled.
- A critically low battery condition occurs.
- The power switch is pressed. (BIOS Setup)

The computer exits hibernation mode and resumes operation when the power-on switch is pressed. When power is turned on, the hibernation file in the boot record on the hard disk drive is read and the system status is restored from the hard disk drive.

The power switch must be pressed to cause the computer to resume operation from hibernation mode.

How to Create the Hibernation Function: Do as follows:

- Turn off the computer.
- Connect the USB diskette drive to the computer.
- Insert the hibernation utility diskette into the diskette drive (you can create the diskette using the Diskette Factory).
- Turn on the computer.
- Follow the instructions on the screen.

Note: If you change the memory size, you need to recreate the hibernation file or partition. For partition-based hibernation, use the hibernation utility to delete the partition first before creating a new one.

Symptom-to-FRU Index

The Symptom-to-FRU Index lists the symptoms and errors and the possible causes. The most likely cause is listed first.

Note: Perform the FRU replacement or actions in the sequence shown in the FRU/Action columns. If a FRU replacement does not solve the problem, put the original part back in the computer. Do not replace a non-defective FRU.

This index can also be used to help you decide the next possible FRUs to be replaced when servicing a computer.

Numeric error codes show the errors detected in POST or system operation (runtime). In the following error codes, X can be any number. If no codes are available, use narrative symptoms.

If the symptom is not listed, go to "Undetermined Problems" on page 25.

Note: For IBM devices not supported by diagnostic codes in this ThinkPad computer, see the manual for that device.

Numeric Error Codes

The following is a list of the message that the BIOS can display. Most of them occur during POST. Some of them display information about a hardware device, e.g., the amount of memory installed. Others may indicate a problem with a device, such as the way it has been configured. Following the list are explanations of the messages and remedies for reported problems.

If the system fails after you make changes in the Setup menus, reset the computer, enter Setup and install Setup defaults or correct the error.

Symptom/Error	FRU/Action in Sequence
0200 Failure Fixed Disk	1. Reseat hard disk drive. 2. Load Setup Defaults in BIOS Setup Utility. 3. Hard disk drive 4. System board
0210 Keyboard error	Go to "Keyboard and Auxiliary Input Device Checkout" on page 12.

Symptom/Error	FRU/Action in Sequence
0212 Keyboard Controller Failed	Go to "Keyboard and Auxiliary Input Device Checkout" on page 12.
0213 Keyboard locked — Unlock key switch	Unlock external keyboard.
0220 Monitor type does not match CMOS — Run Setup	Load Setup Defaults in BIOS Setup Utility.
0230 Shadow RAM Failed at offset:nnnn	System board
0231 System RAM Failed at offset:nnnn	1. DIMM 2. System board
0232 Extended RAM Failed at offset:nnnn	1. DIMM 2. System board
0250 System battery is dead	System board
0251 System CMOS checksum bad — Default configuration used	System board
0260 System timer error	1. Run BIOS Setup Utility to reconfigure the system, then reboot the system. 2. System board
0270 Real time clock error	1. Run BIOS Setup Utility to reconfigure the system, then reboot the system. 2. System board
0280 Previous boot incomplete — Default configuration used	1. Load Setup Defaults in the BIOS Setup Utility. 2. System board

Symptom/Error	FRU/Action in Sequence
0281 Memory size found by POST differed from CMOS	1. Load Setup Defaults in the BIOS Setup Utility. 2. DIMM 3. System board
02D0 System cache error — Cache disabled	System board
02F0 CPU ID:	System board
02F5 DMA Test Failed	1. DIMM 2. System board
02F6 Software NMI Failed	1. DIMM 2. System board
02F7 Fail-Safe Timer NMI Failed	1. DIMM 2. System board

Error Messages

Symptom/Error	FRU/Action in Sequence
Device Address Conflict	1. Load Setup Defaults in BIOS Setup Utility. 2. System board
Allocation Error for: device	1. Load Setup Defaults in BIOS Setup Utility. 2. System board
Failing Bits: nnnn	1. DIMM 2. System board
Invalid System Configuration Data	System board
I/O device IRQ conflict	1. Load Setup Defaults in BIOS Setup Utility. 2. System board

Symptom/Error	FRU/Action in Sequence
Operating system not found	1. Check that the operating system has no failure and is installed correctly. 2. Enter IBM BIOS Setup Utility and see whether the hard disk drive and the diskette drive are properly installed. 3. Diskette drive 4. Hard disk drive 5. System board

No Beep Symptoms

Symptom/Error	FRU/Action in Sequence
No beep, power-on indicator on, LCD blank, no POST	1. Ensure every connector is connected tightly and correctly. 2. DIMM 3. System board
No beep, power-on indicator off, LCD blank during POST	1. Battery ASM 2. AC Adapter 3. System board
No beep, power-on indicator on, LCD blank during POST	1. Reseat DIMM. 2. System board
No beep during POST but system runs correctly.	Speaker

LCD-Related Symptoms

Symptom/Error	FRU/Action in Sequence
LCD backlight not working LCD too dark LCD brightness cannot be adjusted	1. Reseat the LCD connector. 2. LCD FPC ASM 3. LCD inverter 4. LCD 5. System board
LCD screen unreadable Character missing pels Screen abnormal Wrong color displayed	1. Reseat the LCD connector. 2. LCD FPC ASM 3. LCD inverter 4. LCD 5. System board
LCD has extra horizontal or vertical lines displayed.	1. LCD FPC ASM 2. LCD inverter 3. LCD 4. System board

Keyboard-Related Symptoms

Symptom/Error	FRU/Action in Sequence
Keyboard (one or more keys) doesn't work.	1. Reseat the keyboard cable. 2. Keyboard 3. System board

Indicator-Related Symptoms

Symptom/Error	FRU/Action in Sequence
Indicator incorrectly remains off or on, but system runs correctly.	1. Reseat the keyboard connector. 2. Reseat the LCD-to-system-board connector. 3. System board

Power-Related Symptoms

Symptom/Error	FRU/Action in Sequence
Power shuts down during operation.	1. Battery 2. AC Adapter 3. System board
The system will not power on.	1. Battery ASM 2. AC Adapter 3. System board
The system will not power off.	System board
Battery can't be charged.	1. Battery 2. System board

PC Card (PCMCIA)-Related Symptoms

Symptom/Error	FRU/Action in Sequence
System cannot detect the PC Card (PCMCIA)	1. PC Card (PCMCIA) slots assembly 2. System board

CompactFlash Card-Related Symptoms

Symptom/Error	FRU/Action in Sequence
System cannot detect the CompactFlash Card	System board

Speaker-Related Symptoms

Symptom/Error	FRU/Action in Sequence
Speakers make noise or no sound comes from system.	1. Speakers 2. System board
In DOS or Windows multimedia programs, no sound comes from the computer.	1. Speakers 2. System board

Power Management-Related Symptoms

Symptom/Error	FRU/Action in Sequence
The system will not enter hibernation mode.	1. Keyboard (if control is from the keyboard) 2. Hard disk drive 3. System board
The system will not wake up from hibernation mode.	1. Keyboard (if control is from the keyboard) 2. Hard disk drive 3. System board
The system will not enter suspend mode after closing the LCD.	1. Reseat suspend board cable 2. Suspend board ASM 3. System board
Battery fuel-gauge does not go higher than 90%.	1. Remove battery ASM and let it cool for 2 hours. 2. Refresh battery (continue using battery in BIOS Setup mode until power off, then charge battery). 3. Battery 4. System board
System configuration does not match the installed devices.	Load Setup Defaults and reboot the system.
System hangs intermittently.	1. Fan ASM 2. System board

Peripheral-Device-Related Symptom

Symptom/Error	FRU/Action in Sequence
External display does not work correctly.	1. CRT adapter 2. System board
USB does not work correctly.	1. Power board ASM 2. System board

Symptom/Error	FRU/Action in Sequence
IEEE 1394 does not work correctly	1. IEEE 1394 cable 2. Card-to-system board cable 3. IEEE 1394/LAN card ASM 4. System board
Modem does not work correctly	1. Modem cable 2. Modem card ASM 3. System board
Ethernet does not work correctly	1. Card-to-system board cable 2. LAN/1394 combo card ASM 3. Base cover ASM 4. System board
Wireless LAN does not work correctly (s30 only)	1. Wireless card ASM 2. System board
Print problems	1. Run printer self-test. 2. Printer driver 3. Printer cable 4. System board

Note: If you cannot find a symptom or an error in this list and the problem remains, see "Undetermined Problems".

Intermittent Problems

Intermittent system hang problems can be caused by a variety of reasons that have nothing to do with a hardware defect, such as cosmic radiation, electronic discharge, or software errors. FRU replacement should be considered only when a recurring problem exists.

When analyzing an intermittent problem, do the following:

1. Run the diagnostic test for the system board in loop mode at least 10 times.
2. If no error is detected, do not replace any FRUs.
3. If any error is detected, replace the FRU shown by the FRU code. Rerun the test to verify that no more errors exist.

Undetermined Problems

You are here because the diagnostic tests did not identify which adapter or device failed, which installed devices are incorrect, whether a short circuit is suspected, or whether the system is inoperative. Follow these procedures to isolate the failing FRU (do not isolate non-defective FRUs).

Verify that the power supply being used at the time of the failure is operating correctly. (See “Power System Checkout” on page 14.)

1. Power off the computer.
2. Visually check for damage. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices:
   a. Non-IBM devices
   b. Printer, mouse, and other external devices
   c. Battery ASM
   d. Hard disk drive
   e. DIMM
   f. PC Cards (PCMCIA)
4. Power on the computer.
5. Determine if the problem has changed.
6. If the problem does not recur, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRUs one at a time. Do not replace a non-defective FRU.
   a. System board
   b. LCD panel ASM

CE Utility Program Diskette

Writing the Serialization Information

The EEPROM on the system board contains the Serialization Information Data— that is, a system board serial number and a system unit serial number. When you replace the system board, restore the Serialization Information Data using the ThinkPad CE Utility Diskette. The serial number label is attached to the computer.

Writing the UUID

The EEPROM on the system board contains the Universal Unique ID (UUID)— that is, for Microsoft or Internet use. When you replace the system board, restore the new UUID using the ThinkPad CE Utility Diskette. The ThinkPad Utility will automatically generate and assign the new UUID.

Running the Diagnostics

Use either the TrackPoint or the cursor move keys to interact with the tests.

1. Connect the external floppy disk drive to the computer.
2. Insert the PC-Doctor startup disk into the diskette drive.
3. Power-on the computer.
4. At the main menu, select the test to run.
5. Press **Enter** to run the test selected.
6. After starting a test, do not press any key until prompted, then follow the instructions on the screen.
7. When the test is completed, press **Esc** to return to the main menu.
8. Select **Quit/Exit Diags** to exit the diagnostics utility.

FRU Removals and Replacements

This section contains information about removals and replacements.

- Do not damage any parts. Only certified and trained personnel should service the computer.
- The arrows in this section show the direction of movement to remove a FRU, or to turn a screw to release the FRU. The arrows are marked in numeric order, in square callouts, to show the correct sequence of removal.
- When other FRUs must be removed before the failing FRU is removed, they are listed at the top of the page.
- To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement.
- When replacing a FRU, use the correct screw size, as shown in the procedures.

Safety Notice 1::

Before the computer is powered on after FRU replacement, make sure all screws, springs, or other small parts, are in place and are not left loose inside the computer. Verify this by shaking the computer and listening for rattling sounds. Metallic parts or metal flakes can cause an electrical short circuit.

Safety Notice 4::

The battery can cause a fire, explosion, or severe burn. Do not recharge it, remove its polarized connector, disassemble it, heat it above 100°C (212°F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

Safety Notice 8::

Before removing any FRU, power-off the computer, unplug all power cords from electrical outlets, remove the battery ASM, and then disconnect any interconnecting cables.

An electrostatic discharge (ESD) strap (P/N 6405959) must be used to establish personal grounding.

FRU Service Procedures

Review the following procedures before replacing any FRU.

LCD FRU Replacement Notice

The TFT LCD (XGA 10.4–inch) for the computer contains many thin-film transistors (TFTs). A small number of missing, discolored, or lighted dots (on all the time) is characteristic of TFT LCD technology, but excessive pixel problems can cause viewing concerns. The LCD should be replaced if the number of missing, discolored, or lighted dots in any background is: 5 or more bright dots, 5 or more dark dots, or a total of 9 or more bright and dark dots.

Replacing the System Board

When you replace the system board, restore the computer Serialization Information Data and reassign the UUID using the ThinkPad CE Utility Diskette.

Note: Do not power off the computer while restoring the Serialization Information Data and the UUID.

Important Notice

This computer uses special nylon-coated screws with the following characteristics:

- They maintain tight connections.
- They do not easily come loose, even with shock or vibration.
- They need additional force to tighten.
- They should be used only once.

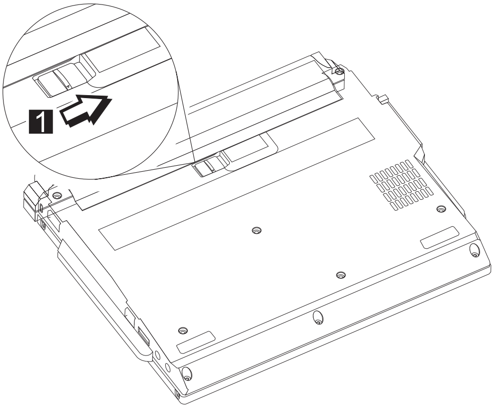
Do the following when you service this computer:

- Have a screw kit (10L1956) available.
- Always use new screws if you are instructed.
- Use a torque screwdriver (U.S. only) if you have one.

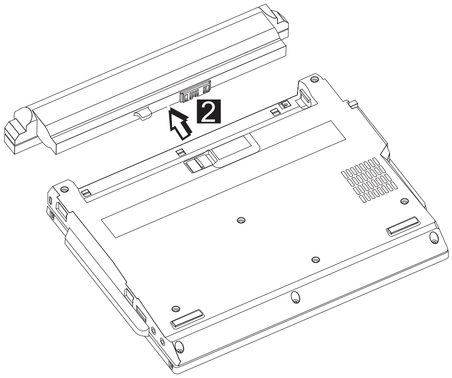
1010 Battery ASM

To remove the battery ASM:

1. Slide the release latch as shown.



2. Remove the battery ASM.



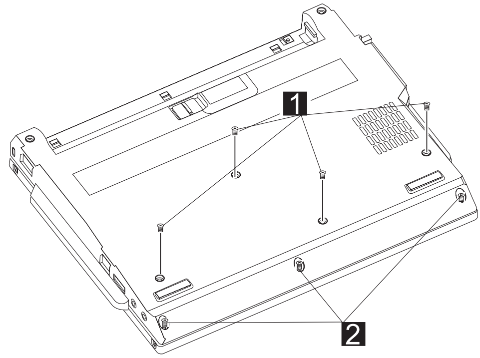
Reverse the steps described above when installing a new battery pack.

1020 Keyboard ASM

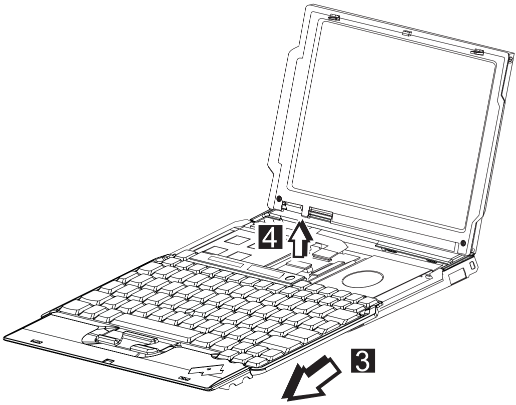
- 1010 Battery ASM

To remove the keyboard ASM:

1. Remove the four screws securing the keyboard.
2. Loosen the other three screws: these screws are fixed to the computer.



3. Turn the notebook over; then move the keyboard as shown.



4. Disconnect the keyboard connector from the system board and remove the keyboard.

Step	Size (Quantity)	Head & Color	Torque
1	M2.0 x 7L (4)	Flat head, black	2.5 kgf-cm
2	N/A	N/A	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1030 Hard Disk Drive ASM

- 1010 Battery ASM
- 1020 Keyboard ASM

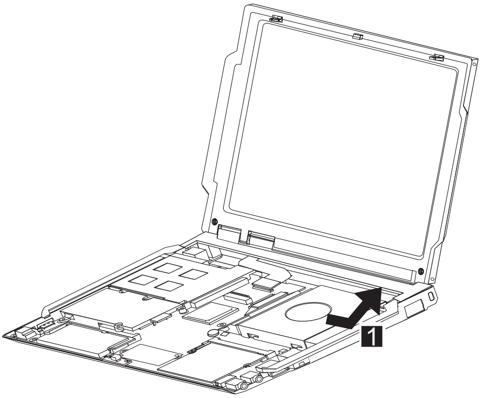
Warning:

- Do not drop or apply any shock to the hard disk drive. The hard disk drive is sensitive to physical shock. Incorrect handling can cause damage and permanent loss of data on the drive.
- Before removing the drive, have the user make a backup copy of all the information on the drive if possible.
- Never remove the drive while the system is operating or is in suspend mode.

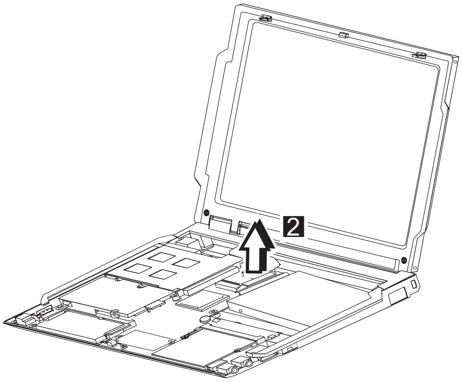
For the s30 series

To remove the hard disk drive ASM:

1. Slide and lift the drive bracket as shown to remove the bracket.



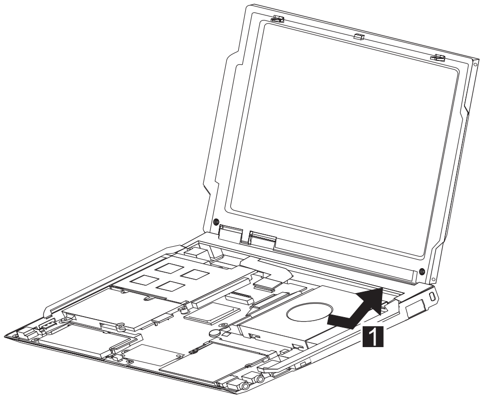
2. Disconnect the IDE connector from the system board and remove the hard disk drive.



For the s31 series

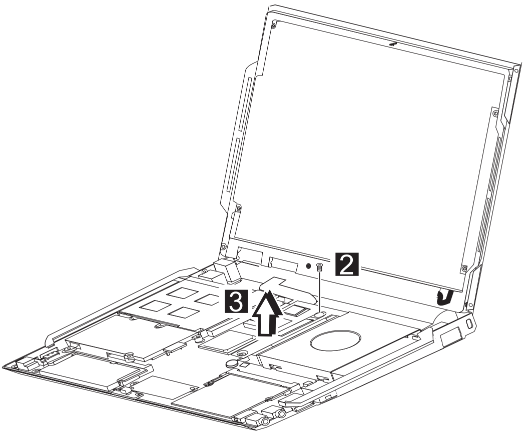
To remove the hard disk drive ASM:

1. Slide and lift the drive bracket as shown to remove the bracket.

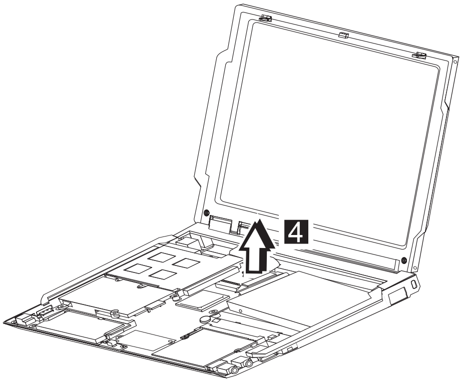


2. Remove the screw from the HDD/FPC bracket.

3. Remove the HDD/FPC bracket.



4. Disconnect the IDE connector from the system board and remove the hard disk drive.



Step	Size (Quantity)	Head & Color	Torque
2	M2.0 x 4L (1)	Flat head, black	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1035 Hard Disk Drive FPC ASM

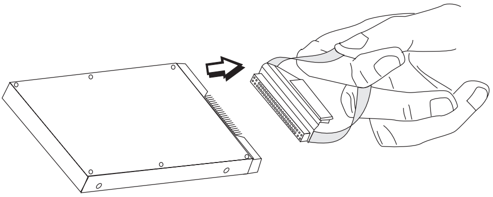
- 1010 Battery ASM
- 1020 Keyboard ASM
- 1030 Hard Disk Drive ASM

Warning:

- Do not drop or apply any shock to the hard disk drive. The hard disk drive is sensitive to physical shock. Incorrect handling can cause damage and permanent loss of data on the drive.
- Before removing the drive or the FPC ASM, have the user make a backup copy of all the information on the drive if possible.
- Never remove the drive while the system is operating or is in suspend mode.

To remove the hard disk drive FPC ASM:

- Grip the plastic strap as shown and remove the FPC ASM.

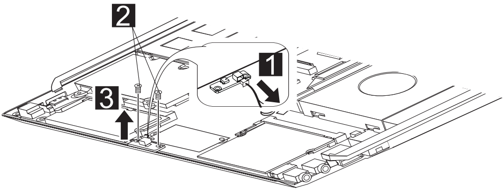


1040 Suspend Board ASM

- 1010 Battery ASM
- 1020 Keyboard ASM

To remove the suspend board:

1. Disconnect the cable from the suspend board.



2. Remove the two screws.
3. Remove the suspend board.

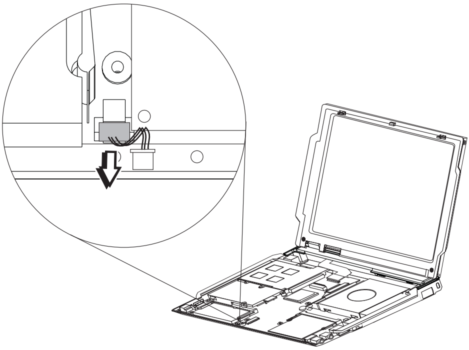
Step	Size (Quantity)	Head & Color	Torque
2	M2.0 x 4L (2)	Flat head, black	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1045 Suspend Board Cable ASM

- 1010 Battery ASM
- 1020 Keyboard ASM
- 1040 Suspend Board ASM

To remove the suspend board cable ASM:

- Disconnect the suspend board cable from the system board.

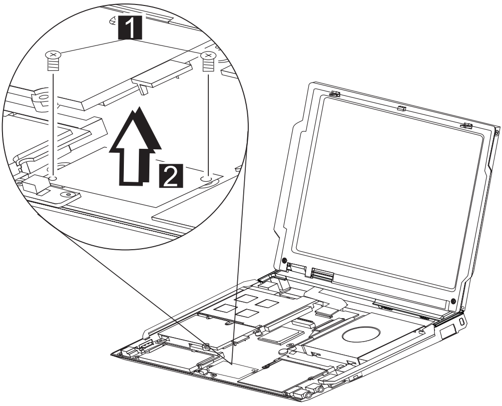


1050 Modem Card ASM

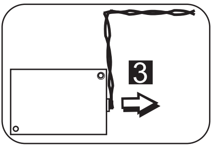
- 1010 Battery ASM
- 1020 Keyboard ASM

To remove the modem card ASM:

1. Remove the two screws.



2. Lift the modem card to disconnect it from the system board.
3. Disconnect the cable from the modem card.



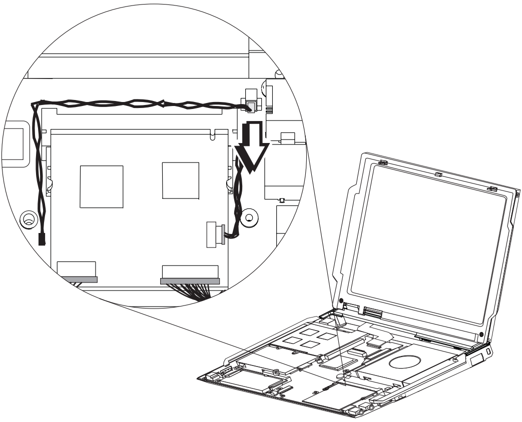
Step	Size (Quantity)	Head & Color	Torque
1	M2.0 x 4L (2)	Flat head, black	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1055 Modem Cable ASM

- 1010 Battery ASM
- 1020 Keyboard ASM
- 1050 Modem Card ASM

To remove the modem cable ASM:

- Disconnect the modem cable from the system board.



1060 Wireless Card ASM (s30 only)

- 1010 Battery ASM
- 1020 Keyboard ASM

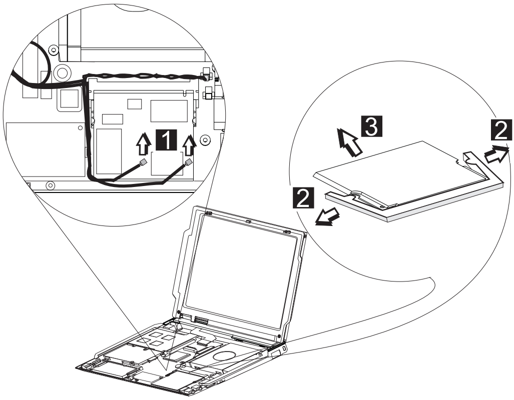
Warning:

Special care must be taken when disconnecting the antenna cables from the wireless card not to damage the connectors or cables. To replace either antenna cable, the hinge ASM must be replaced.

Do not touch the antenna cables. Doing so can impair antenna performance.

To remove the wireless card ASM:

1. Gently disconnect the two cables from the wireless card.
2. Carefully release the latches on both sides of the wireless card.



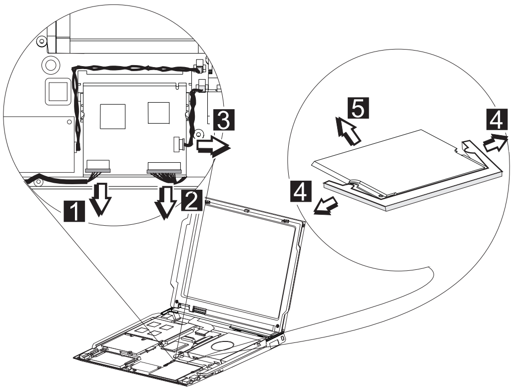
3. Remove the wireless card.

1065 IEEE 1394/LAN Card ASM

- 1010 Battery ASM
- 1020 Keyboard ASM

To remove the IEEE 1394/LAN card ASM:

1. Disconnect the IEE 1394 cable from the card.



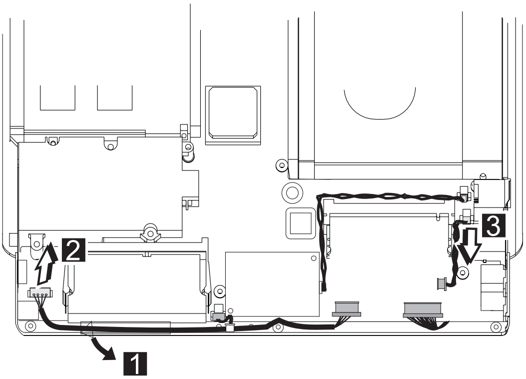
2. Disconnect the LAN cable from the card.
3. Disconnect the card-to-system board cable from the card.
4. Carefully release the latches on both sides of the card.
5. Remove the IEEE 1394 card.

1070 IEEE 1394/LAN Card Cable ASM

- 1010 Battery ASM
- 1020 Keyboard ASM
- 1065 IEEE 1394/LAN Card ASM
- 1040 Suspend Board ASM

To remove the IEEE 1394/LAN card cable ASM:

1. Remove the tape from the IEE 1394 cable.
2. Disconnect the IEE 1394 cable from the system board, then remove the cable.



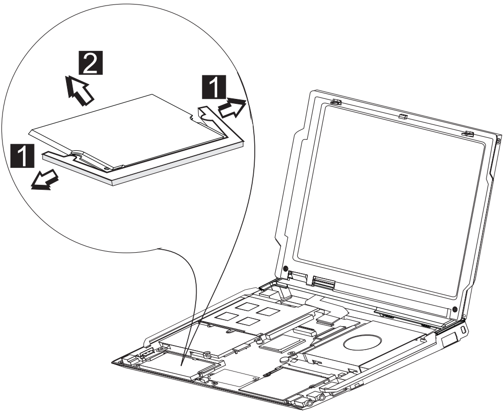
3. Disconnect the card-to-system board cable from the system board, then remove the cable.

1075 DIMM Card ASM

- 1010 Battery ASM
- 1020 Keyboard ASM

To remove the memory card ASM:

1. Carefully release the latches on both sides of the memory card.



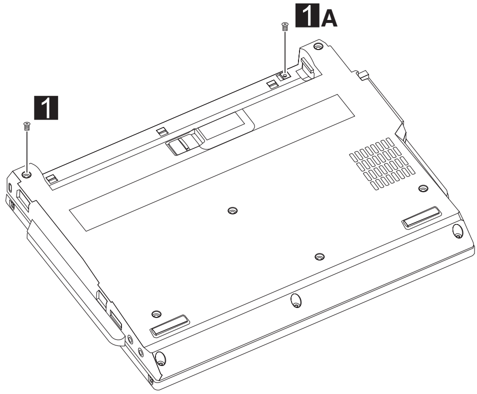
2. Gently remove the memory card.

1080 Upper Cover ASM

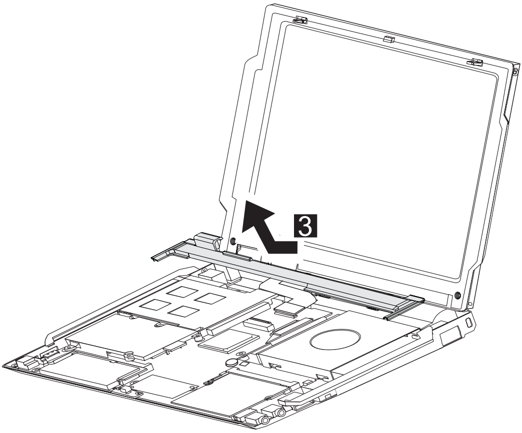
- 1010 Battery ASM
- 1020 Keyboard ASM

To remove the upper cover ASM:

1. Remove the two screws.



2. Turn the computer over, then remove the upper cover assembly as shown.



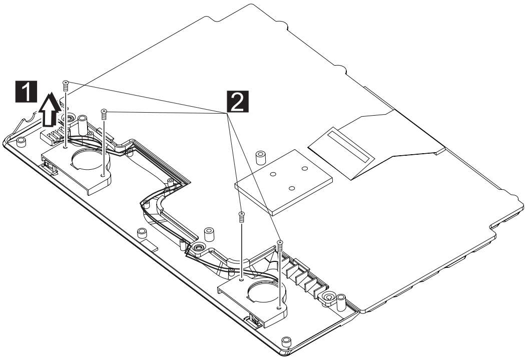
Step	Size (Quantity)	Head & Color	Torque
1	M2.5 x 5L (1)	Flat head, black	2.5 kgf-cm
1A	M2.0 x 4L (1)	Flat head, black	2.5 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1085 Speaker ASM

- 1010 Battery ASM
- 1020 Keyboard ASM

To remove the speakers ASM:

1. Remove the connector.



2. Remove the four screws securing the speakers and remove the speakers.

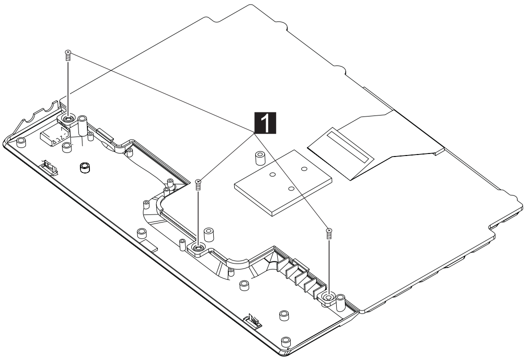
Step	Size (Quantity)	Head & Color	Torque
2	M2.0 x 4L (4)	Flat head, black	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1090 Palm Rest ASM

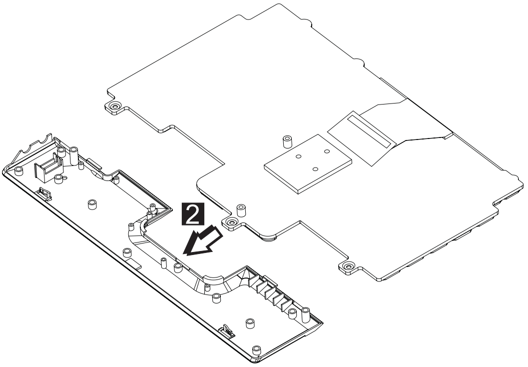
- 1010 Battery ASM
- 1020 Keyboard ASM
- 1085 Speaker ASM

To remove the palm rest ASM:

1. Remove the three screws.



2. Remove the palm rest as shown.



Step	Size (Quantity)	Head & Color	Torque
1	M2.0 x 2.5L (3)	Flat head, silver	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1100 Fan ASM

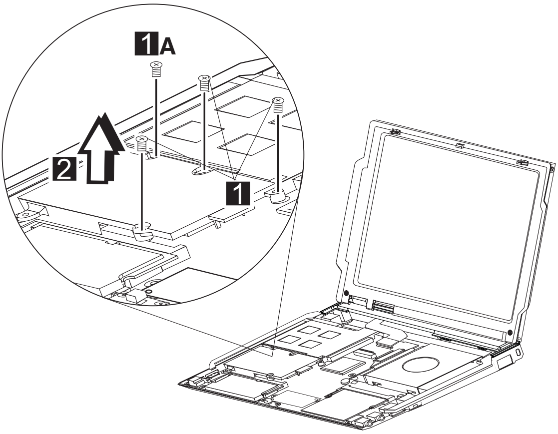
- 1010 Battery ASM
- 1020 Keyboard ASM

Warning:

Do not apply pressure on the fan blades or hub assembly; doing so can damage the fan bearings.

To remove the fan ASM:

1. Remove the four screws securing the fan ASM.
2. Carefully lift the fan ASM.

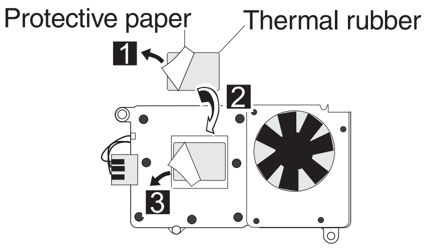


Warning:

The fan ASM FRU includes a small pad of thermal rubber. The thermal rubber has adhesive and protective paper on both sides and must be fixed onto the fan ASM before reassembly.

To fix the thermal rubber onto the fan ASM:

1. Remove the protective paper from one side of the thermal rubber.
2. Press the thermal rubber firmly in place on the fan ASM.
3. Remove the protective paper from the other side of the thermal rubber.



Step	Size (Quantity)	Head & Color	Torque
1	M2.0 x 7L (3)	Flat head, black	2.5 kgf-cm
1A	M2.0 x 9L (1)	Flat head, black	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1130 PCMCIA Slots

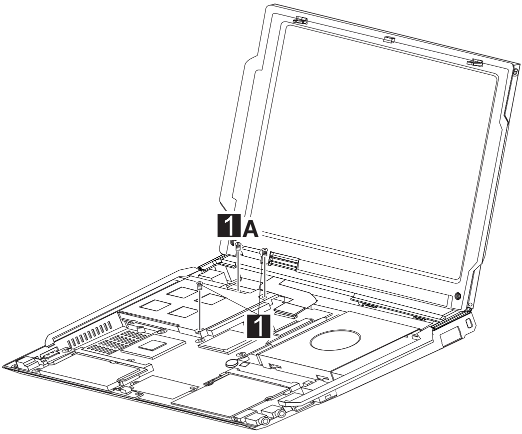
- 1010 Battery ASM
- 1020 Keyboard ASM
- 1100 Fan ASM

Warning:

Special care must be taken when disconnecting the PCMCIA slots not to cause a short or damage the connector.

To remove the PCMCIA slots ASM:

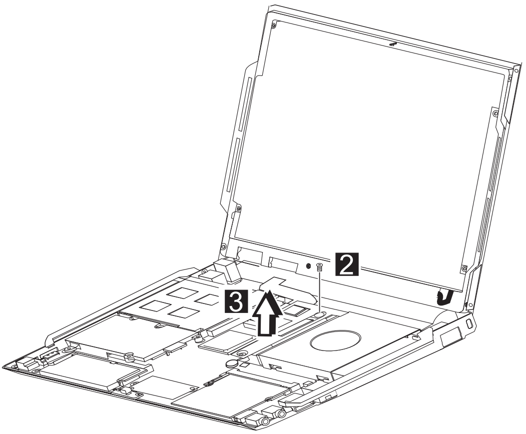
1. Remove the three screws.



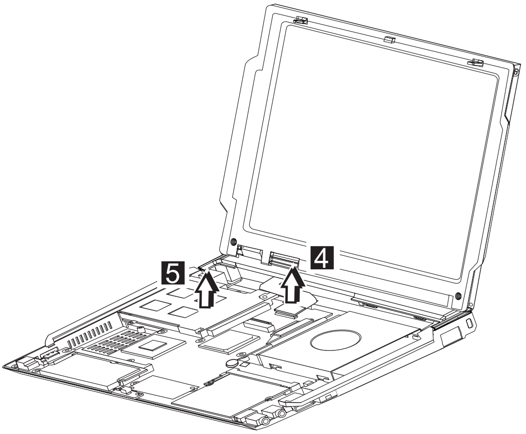
Note: The following steps 2 and 3 only apply to the s31 series. If you are servicing the s30 series, skip to step 4.

2. Remove the screw from the HDD/FPC bracket.

3. Remove the HDD/FPC bracket.



4. Disconnect the FPC connector from the system board.
5. Grip firmly at the sides of the PCMCIA slots, then lift up to remove.



Step	Size (Quantity)	Head & Color	Torque
1	M2.0 x 7L (2)	Flat head, black	2.5 kgf-cm
1A	M2.0 x 4L (1)	Flat head, black	2.0 kgf-cm
2	M2.0 x 4L (1)	Flat head, black	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

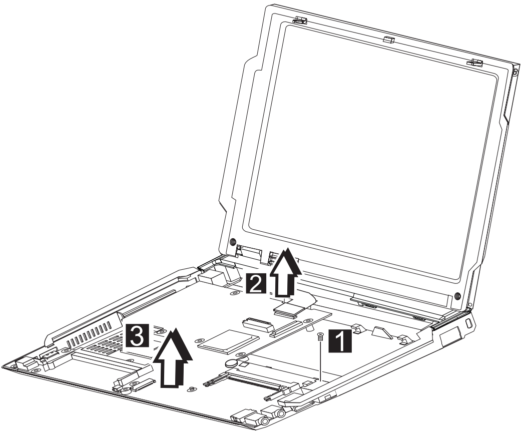
1140 System Board

- 1010 Battery ASM
- 1020 Keyboard ASM
- 1030 Hard Disk Drive ASM
- 1040 Suspend Board ASM
- 1045 Suspend Board Cable ASM
- 1050 Modem Card ASM
- 1055 Modem Cable ASM
- 1060 Wireless Card ASM (s30 only)
- 1065 IEEE 1394/LAN Card ASM
- 1070 IEEE 1394/LAN Card Cable ASM
- 1075 DIMM Card ASM
- 1100 Fan ASM
- 1130 PCMCIA Slots

Note: See “CE Utility Program Diskette” on page 27 and “Replacing the System Board” on page 29 before proceeding.

To remove the system board ASM:

1. Remove the screw.



2. Disconnect the FPC connector from the system board.
3. Remove the system board.

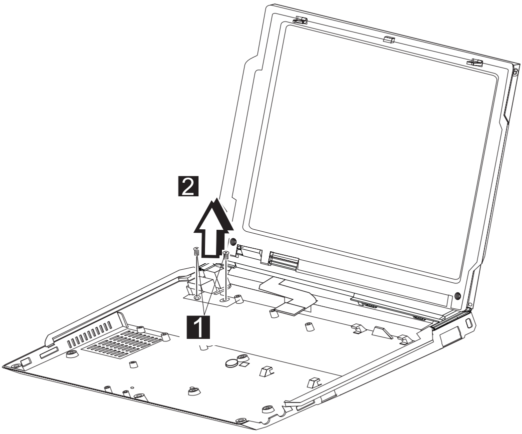
Step	Size (Quantity)	Head & Color	Torque
1	M2.0 x 4L (1)	Flat head, black	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1145 Power Board ASM

- 1010 Battery ASM
- 1020 Keyboard ASM
- 1030 Hard Disk Drive ASM
- 1040 Suspend Board ASM
- 1050 Modem Card ASM
- 1060 Wireless Card ASM (s30 only)
- 1100 Fan ASM
- 1130 PCMCIA Slots
- 1140 System Board

To remove the power board ASM:

1. Remove the two screws.



2. Remove the power board.

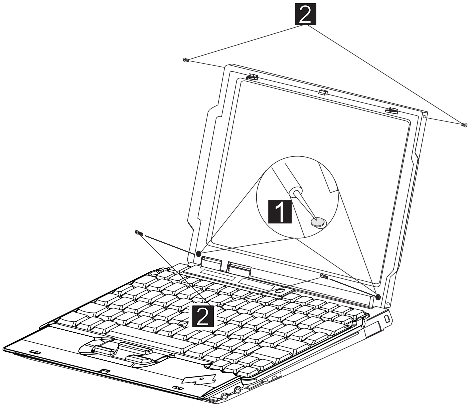
Step	Size (Quantity)	Head & Color	Torque
1	M2.0 x 2.5L (2)	Flat head, silver	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1150 LCD Bezel ASM

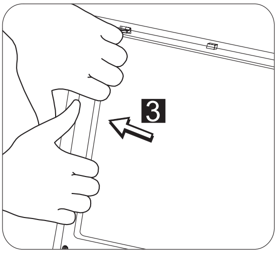
- 1010 Battery ASM

To remove the LCD bezel ASM:

1. Remove the screw cap covers.
2. Remove the four screws as shown.



3. Gripping as shown, remove the LCD bezel.



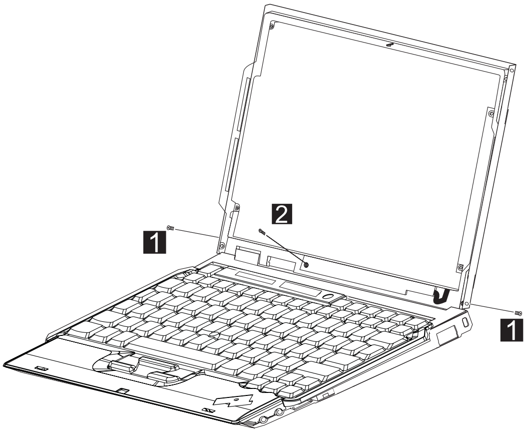
Step	Size (Quantity)	Head & Color	Torque
2	M2.5 x 3L (4)	Flat head, black	2.5 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1155 LCD Rear Cover ASM

- 1010 Battery ASM
- 1150 LCD Bezel ASM

To remove the LCD rear cover ASM:

1. Remove the two screws from the rear cover as shown.



2. Remove the screw from the inverter card, then remove the rear cover ASM.

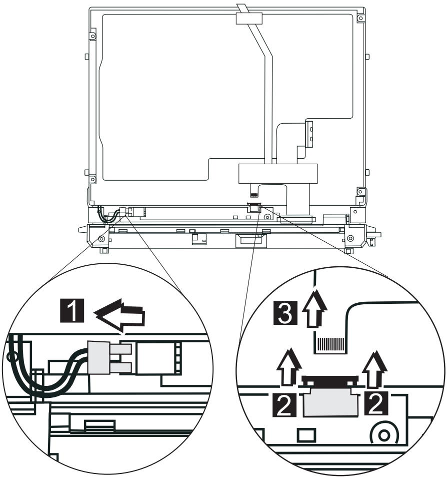
Step	Size (Quantity)	Head & Color	Torque
1	M2.5 x 3L (2)	Flat head, black	2.5 kgf-cm
2	2.0 M x 4L (1)	Flat head, black	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1160 LCD Inverter ASM

- 1010 Battery ASM
- 1150 LCD Bezel ASM
- 1155 LCD Rear Cover ASM

To remove the LCD inverter ASM:

1. Disconnect the flex cable from the inverter card.
2. Lift the two sides of the FPC connector as shown.



3. Disconect the FPC cable from the inverter card, then remove the inverter card.

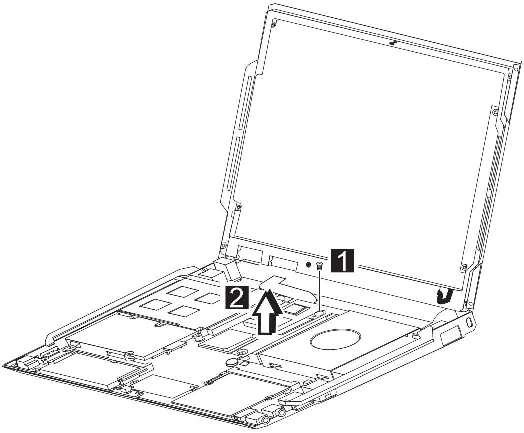
1170 LCD FPC ASM

- 1010 Battery ASM
- 1020 Keyboard ASM
- 1080 Upper Cover ASM
- 1150 LCD Bezel ASM
- 1155 LCD Rear Cover ASM

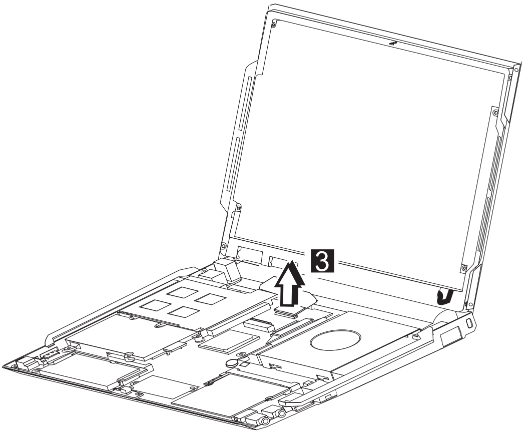
To remove the LCD FPC ASM:

Note: Steps 1 and 2 in the following procedure only apply to the s31 series. If you are servicing the s30 series, skip to step 3.

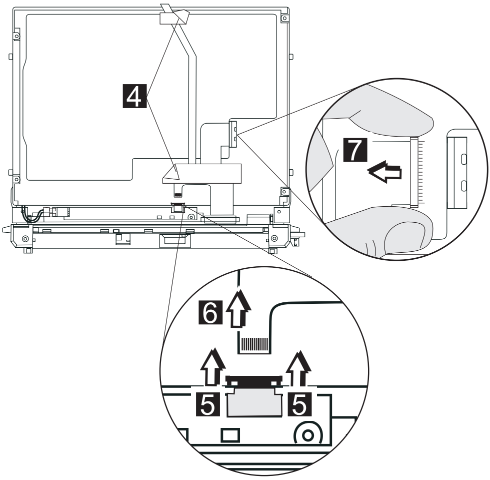
1. Remove the screw from the HDD/FPC bracket.
2. Remove the HDD/FPC bracket.



3. Disconnect the FPC connector from the system board.



4. Remove the tape from the FPC cable.



5. Lift the two sides of the FPC connector as shown.
6. Disconect the FPC cable from the inverter card.
7. Disconnect the FPC cable from the LCD panel, then remove the LCD FPC ASM.

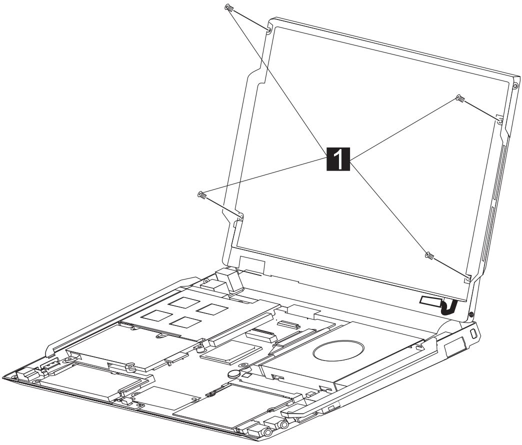
Step	Size (Quantity)	Head & Color	Torque
1	M2.0 x 4L (1)	Flat head, black	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1180 LCD Panel ASM

- 1010 Battery ASM
- 1020 Keyboard ASM
- 1080 Upper Cover ASM
- 1150 LCD Bezel ASM
- 1155 LCD Rear Cover ASM
- 1160 LCD Inverter ASM
- 1170 LCD FPC ASM

To remove the LCD panel ASM:

1. Remove the four screws, then remove the LCD panel.



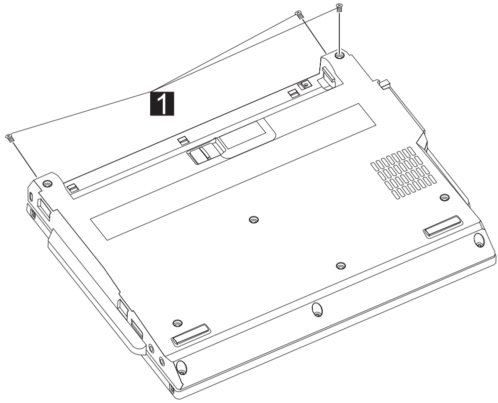
Step	Size (Quantity)	Head & Color	Torque
1	M2.5 x 4L (4)	Flat head, silver	2.0 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1185 Hinge ASM

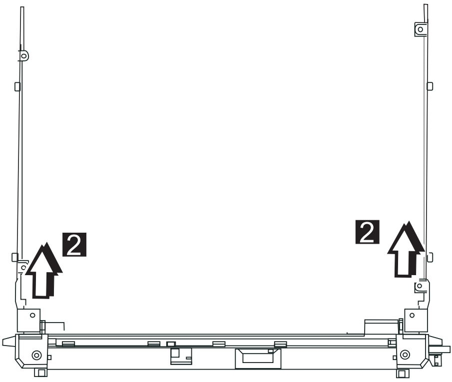
- 1010 Battery ASM
- 1020 Keyboard ASM
- 1080 Upper Cover ASM
- 1150 LCD Bezel ASM
- 1155 LCD Rear Cover ASM
- 1160 LCD Inverter ASM
- 1170 LCD FPC ASM
- 1180 LCD Panel ASM

To remove the hinge ASM:

1. Remove the three screws.



2. Remove the hinges.



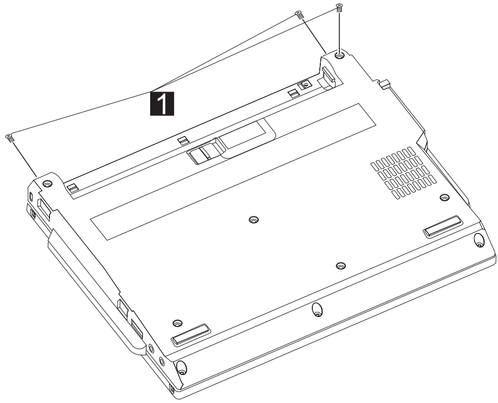
Step	Size (Quantity)	Head & Color	Torque
1	M2.5 x 5L (3)	Flat head, black	2.5 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1190 Hinge ASM (Wireless—s30 only)

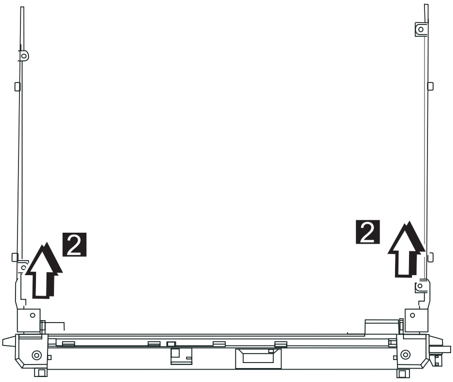
- 1010 Battery ASM
- 1020 Keyboard ASM
- 1080 Upper Cover ASM
- 1150 LCD Bezel ASM
- 1155 LCD Rear Cover ASM
- 1160 LCD Inverter ASM
- 1170 LCD FPC ASM
- 1180 LCD Panel ASM

To remove the hinge ASM:

1. Remove the three screws.

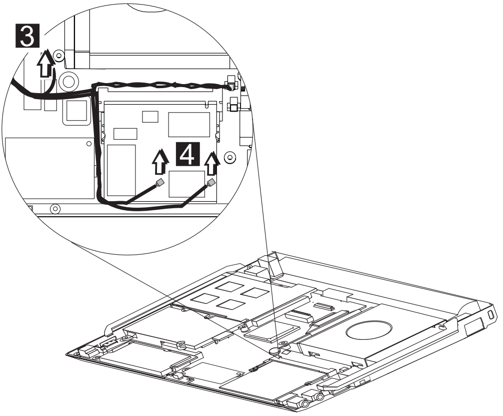


2. Remove the hinges.



3. Remove the tape.

4. Disconnect the cables from the wireless card.

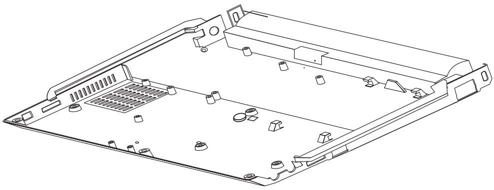


Step	Size (Quantity)	Head & Color	Torque
1	M2.5 x 5L (3)	Flat head, black	2.5 kgf-cm
Note: Make sure you use the correct screw for replacement.			

1195 Base ASM

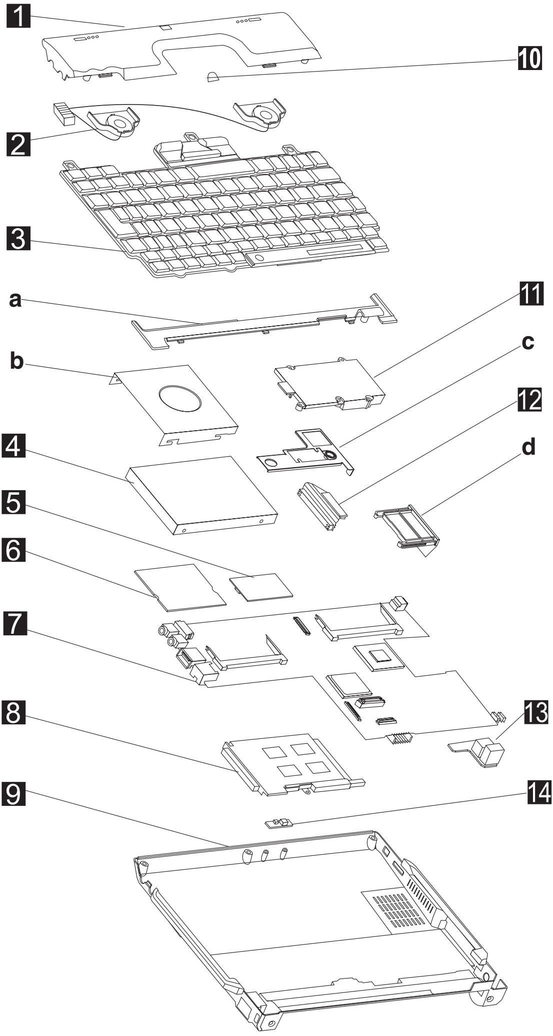
- 1010 Battery ASM
- 1020 Keyboard ASM
- 1030 Hard Disk Drive ASM
- 1040 Suspend Board ASM
- 1050 Modem Card ASM
- 1080 Upper Cover ASM
- 1060 Wireless Card ASM (s30 only)
- 1065 IEEE 1394/LAN Card ASM
- 1070 IEEE 1394/LAN Card Cable ASM
- 1100 Fan ASM
- 1130 PCMCIA Slots
- 1140 System Board
- 1145 Power Board ASM
- 1150 LCD Bezel ASM
- 1155 LCD Rear Cover ASM
- 1160 LCD Inverter ASM
- 1170 LCD FPC ASM
- 1180 LCD Panel ASM
- 1185 Hinge ASM

To remove the base ASM remove all the above FRUs, then replace the base ASM.



Computer Parts Listing

For s30 and s31



Note: Each FRU is available for all types or models, unless specific types or models are given.

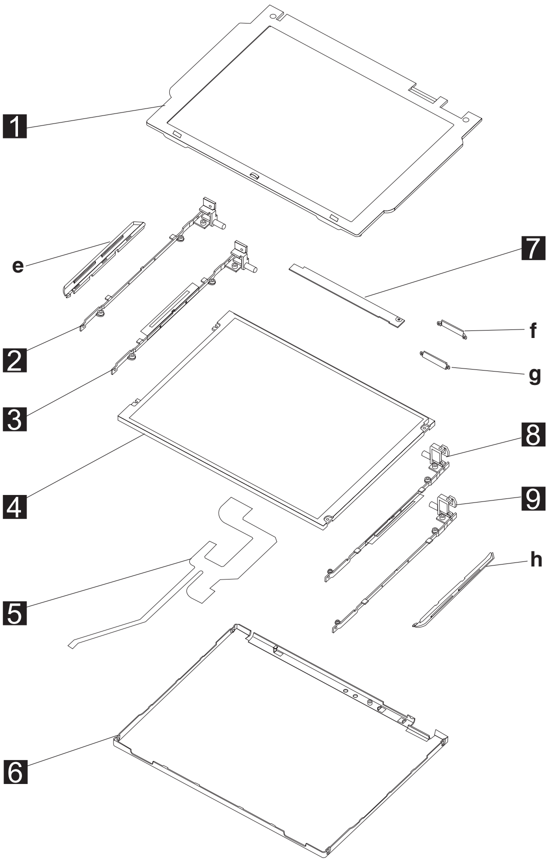
Index	Description	FRU Number
a—d	See MISC PARTS list	26P9299
1	PALM REST ASM	26P9412
2	SPEAKER ASM	26P9298

Index	Description	FRU Number
3	KEYBOARD ASM	02K5916
	KEYBOARD ASM (i-Series)	02K5923
	KEYBOARD ASM US for s31	02K5917
	KEYBOARD ASM Traditional Chinese for s31	02K6170
	KEYBOARD ASM Korean for s31	02K6172
4	HARD DISK DRIVE ASM 20 GB for s30 (includes HDD bracket, see MISC PARTS - b)	08K9612
	HARD DISK DRIVE ASM 15 GB for s31 (includes HDD bracket, see MISC PARTS - b)	08K9691
	HARD DISK DRIVE ASM 30 GB for s31 (includes HDD bracket, see MISC PARTS - b)	08K9689
5	MODEM CARD ASM for s30	08K3137
	MODEM CARD ASM for s31	26P8219
6	IEEE 1394/LAN CARD	26P8100
	WIRELESS CARD (s30 only)	08K3309
7	SYSTEM BOARD ASM PIII600/300, 128 MB	12P3639
8	PCMCIA SLOT	26P9297
9	BASE COVER ASM (WW) w/ RJ-45	26P9302
	BASE COVER ASM (WW) w/o RJ-45	26P9339
10	TRACKPOINT CAP	84G6536
11	FAN ASM	26P9300
12	HARD DISK DRIVE FPC ASM	27L0647
13	POWER BOARD ASM	26P8048
14	SUSPEND BOARD	26P8049

Description	FRU Number
AC Adapter 56W (2 PIN) Delta for s30	02K6548
AC Adapter 56W (2 PIN) Sanken for s30	02K6554
AC Adapter 56W (3 PIN) Delta for s31	02K6550
AC Adapter 56W (3 PIN) Sanken for s31	02K6555
SCREW KIT	26P9301
TELEPHONE CABLE US	27L0478
32 MB DIMM	20L0263
64 MB DIMM	20L0264
128 MB DIMM	20L0265
6-CELL BATTERY for s30	02K6786
6-CELL BATTERY for s31	02K6895

Description	FRU Number
9-CELL BATTERY for s30	02K6802
9-CELL BATTERY for s31	02K6893
POWER CORD (Japan 2 PIN)	13H5273
CABLE PACK (RJ-11 cable, suspend board cable)	27L0643
COMBO CABLE PACK (IEEE 1394 cable, card-to-system board cable)	27L0661
MISC PARTS (a) UPPER COVER (b) HDD BRACKET (c) HDD/FPC BRACKET for s31 (d) PCMCIA DUMMY (e) ANTENNA HOLDER - R (s30 only) (f) FPC HOLDER (upper) (g) FPC HOLDER (lower) (h) ANTENNA HOLDER - L (s30 only) SCREW SHEET (LCD) INSULATION SHEET THERMAL PAD	26P9299

LCD Unit Parts Listing



Index	Computer	FRU Number
e — h	See MISC PARTS list	26P9299
1	LCD BEZEL ASM	26P9303
	LCD BEZEL ASM (i-Series)	26P9509
2	HINGE-R w/o antenna ASM	26P9308
3	HINGE-R w/ antenna ASM (s30 only)	26P9306
4	LCD UNIT-TFT 10.4-inch	05K9937
5	LCD FPC CABLE ASM	27L0693
6	LCD REAR COVER ASM	26P9304
7	INVERTER CARD ASM	26P8050
8	HINGE-L w/ antenna ASM (s30 only)	26P9305
9	HINGE-L w/o antenna ASM	26P9307

Service Tools

Description	FRU No.
Diagnostic Diskette	N/A
CE Utility Diskette	N/A
Recovery CD Japan Win2K for s30 (2639-4WJ, 42J)	46P4410
Recovery CD Japan WinME for s30 (2639-43J, 4AJ)	46P4414
Recovery CD Japan XPHome for s31 (2639-RAJ, R3J, RRJ, R5J)	46P6979
Recovery CD English ASEAN, Hong Kong XPHome for s31 (2639-53A, 53H)	32P6298
Recovery CD T/C Taiwan XPHome for s31 (2639-54T)	46P6364
Recovery CD T/C Hong Kong XPHome for s31 (2639-53B)	46P6366
Tri-Connector Wrap Plug	72X8546
PC Test Card	35G4703
Audio Wrap Cable	66G5180
Screwdriver Kit	95F3598
USB Parallel Test Cable	05K2580
Torque Screwdriver (U.S. only)	05K4695
5 mm Socket Wrench	05K4694
Screwdriver	27L8126

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